

WHAT IS CLAIMED IS:

1. A non-aqueous electrolyte secondary cell comprising:

a cathode employing a cathode active material containing a compound of the olivinic structure having the formula  $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ , where M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, with  $0.05 \leq x \leq 1.2$  and  $2.0 \leq y \leq 0.8$ ;

an anode; and

an electrolyte solution; said cathode, anode and the electrolyte solution being housed in a container; wherein

the amount of said electrolyte solution is adjusted to provide a void in said container of not less than 0.14 cc and not larger than 3.3 cc per 1Ah of the cell capacity.

2. The non-aqueous electrolyte secondary cell according to claim 1 wherein said cathode active material contains a composite material of said compound and a carbon material.

3. The non-aqueous electrolyte secondary cell according to claim 1 wherein said anode contains a carbonaceous material as an anode active material.

4. The non-aqueous electrolyte secondary cell according to claim 1 wherein a strip-shaped cathode material and an anode material are layered together via a separator and are wound a plural number of times to form a cell device, said cell device being housed in a cell can as said container.

5. The non-aqueous electrolyte secondary cell according to claim 4 wherein said cathode material includes a cathode current collector on each side of which a layer of a cathode active material containing a cathode active material is formed and wherein said anode material includes an anode current collector on each side of which a layer of an anode active material containing an anode active material is formed.
6. The non-aqueous electrolyte secondary cell according to claim 5 wherein said layer of the cathode active material is formed of an  $\text{LiFePO}_4$  carbon composite material composed of said compound and a carbon material.
7. The solid electrolyte cell according to claim 6 wherein the carbon content per unit volume in said  $\text{LiFePO}_4$  carbon composite material is not less than 3 wt%.
8. The solid electrolyte cell according to claim 6 wherein the carbon material of said  $\text{LiFePO}_4$  carbon composite material has a strength to area ratio of a diffraction line appearing at the number of waves of  $1570$  to  $1590\text{ cm}^{-1}$  (G peak) to a diffraction line appearing at the number of waves of  $1340$  to  $1360\text{ cm}^{-1}$  (D peak) of the Raman spectrum in Raman spectrometry, or  $A(D/G)$ , equal to 0.3 or higher.
9. The solid electrolyte cell according to claim 6 wherein the powder density of said  $\text{LiFePO}_4$  carbon composite material is not less than  $2.2\text{ g/cm}^3$ .
10. The solid electrolyte cell according to claim 6 wherein the Bullnauer Emmet Teller specific surface is not less than  $10.3\text{ m}^2/\text{g}$ .
11. The solid electrolyte cell according to claim 6 wherein the first-order particle size of said  $\text{LiFePO}_4$  carbon composite material is not larger than  $3.1\text{ }\mu\text{m}$ .

12. The solid electrolyte cell according to claim 1 wherein said non-aqueous electrolyte is a non-aqueous electrolyte solution composed of an electrolyte dissolved in a non-aqueous protonic solution.

13. The solid electrolyte cell according to claim 1 wherein said non-aqueous electrolyte is a solid electrolyte.